

WHAT IS CLAIMED IS:

1. A process for producing polyurethane(urea) encapsulated, slow release fertilizer particles comprising:
  - a) applying a polyisocyanate component to fertilizer particles to form isocyanate coated fertilizer particles,
  - b) mixing an inert filler with said isocyanate coated fertilizer,
  - c) adding an isocyanate-reactive component to the mixture of step b) and
  - 10 d) allowing the reactive components to form filler containing polyurethane(urea) encapsulated fertilizer particles containing from about 1 to about 15 percent by weight of filled polyurethane(urea), said percent by weight based on the total weight of the encapsulated fertilizer, with the proviso that the weight ratio of polyurethane(urea) to filler is from about 15 80:20 to about 30:70.
2. The process of Claim 1 wherein steps a), b), c) and d) are repeated (successively) as many times as necessary, with the polyurethane(urea) encapsulated fertilizer particles from the previous step d) being  
20 substituted for the fertilizer particles in step a), so as to form polyurethane(urea) encapsulated fertilizer particles containing from about 1 to about 15 % by weight of filled polyurethane(urea) based on the total weight of the encapsulated fertilizer.
- 25 3. The process of Claim 1, wherein said filler containing polyurethane(urea) encapsulated fertilizer particles contain from about 4 to about 12% by weight of filled polyurethane(urea).
4. The process of Claim 1, wherein said ratio is from about 80:30 to  
30 about 30:70.

5. The process of Claim 4, wherein said ratio is from about 60:40 to about 40:60.

6. The process of Claim 1, wherein said filler is an inert, inorganic material which is insoluble or substantially insoluble in water and which contains at least 50% by weight of particles having a particle size of less than 100 microns.

7. A process for producing polyurethane(urea) encapsulated, slow release fertilizer particles comprising:

10 a) applying a polyisocyanate component to fertilizer particles to form coated fertilizer particles,

b) adding an isocyanate-reactive component to said coated fertilizer particles,

15 c) mixing an inert inorganic filler with the mixture of step b) before the isocyanate and isocyanate-reactive component react and

d) allowing the reactive components to react to form filler containing polyurethane(urea) encapsulated fertilizer particles containing from about 1 to about 15 percent by weight of filled polyurethane(urea), said percent

20 by weight based on the total weight of the encapsulated fertilizer, with the proviso that the weight ratio of polyurethane(urea) to filler is from about 80:20 to about 30:70.

8. The process of Claim 7 wherein steps a), b), c) and d) are repeated

25 (successively) as many times as necessary, with the polyurethane(urea) encapsulated fertilizer particles from the previous step d) being substituted for the fertilizer particles in step a), so as to form polyurethane(urea) encapsulated fertilizer particles containing from about

1 to about 15 % by weight of filled polyurethane(urea) based on the total weight of the encapsulated fertilizer.

9. The process of Claim 7, wherein said filler containing  
5 polyurethane(urea) encapsulated fertilizer particles contain from about 4 to about 12% by weight of filled polyurethane(urea).

10. The process of Claim 7, wherein said ratio is from about 80:30 to about 30:70.  
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11. The process of Claim 10, wherein said ratio is from about 60:40 to about 40:60.

12. The process of Claim 7, wherein said filler is an inert, inorganic  
15 material which is insoluble or substantially insoluble in water and which contains at least 50% by weight of particles having a particle size of less than 100 microns.

13. A process for producing polyurethane(urea) encapsulated, slow  
20 release fertilizer particles comprising:  
a) mixing fertilizer particles with an inert inorganic filler,  
b) applying a polyisocyanate component to the mixture to form a mixture of coated fertilizer particles and coated inert filler,  
c) adding an isocyanate-reactive component to the resultant mixture  
25 and  
d) allowing the reactive components to react to form filler containing polyurethane(urea) encapsulated fertilizer particles containing from about 1 to about 15 percent by weight of filled polyurethane(urea), said percent by weight based on the total weight of the encapsulated fertilizer, with the

proviso that the weight ratio of polyurethane(urea) to filler is from about 80:20 to about 30:70.

14. The process of Claim 13 wherein steps a), b), c) and d) are  
5 repeated (successively) as many times as necessary, with the  
polyurethane(urea) encapsulated fertilizer particles from the previous step  
d) being substituted for the fertilizer particles in step a), so as to form  
polyurethane(urea) encapsulated fertilizer particles containing from about  
1 to about 15 % by weight of filled polyurethane(urea) based on the total  
10 weight of the encapsulated fertilizer.

15. The process of Claim 13, wherein said filler containing  
polyurethane(urea) encapsulated fertilizer particles contain from about 4  
to about 12% by weight of filled polyurethane(urea).

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16. The process of Claim 13, wherein said ratio is from about 80:30 to  
about 30:70.

17. The process of Claim 16, wherein said ratio is from about 60:40 to  
20 about 40:60.

18. The process of Claim 13, wherein said filler is an inert, inorganic  
material which is insoluble or substantially insoluble in water and which  
contains at least 50% by weight of particles having a particle size of less  
25 than 100 microns.

19. A process for producing polyurethane(urea) encapsulated, slow  
release fertilizer particles comprising:  
a) applying an isocyanate reactive component to fertilizer particles to  
30 form coated fertilizer particles,

- b) mixing an inert inorganic filler with said coated fertilizer particles,
  - c) adding a polyisocyanate component to the mixture of step b) and
  - d) allowing the reactive components to react to form filler containing polyurethane(urea) encapsulated fertilizer particles containing from  
5 about 1 to about 15 percent by weight of filled polyurethane(urea),  
said percent by weight based on the total weight of the  
encapsulated fertilizer, with the proviso that the weight ratio of  
polyurethane(urea) to filler is from about 80:20 to about 30:70.
20. The process of Claim 19 wherein steps a), b), c) and d) are  
10 repeated (successively) as many times as necessary, with the  
polyurethane(urea) encapsulated fertilizer particles from the previous step  
d) being substituted for the fertilizer particles in step a), so as to form  
polyurethane(urea) encapsulated fertilizer particles containing from about  
1 to about 15 % by weight of filled polyurethane(urea) based on the total  
15 weight of the encapsulated fertilizer.
21. The process of Claim 19, wherein said filler containing  
polyurethane(urea) encapsulated fertilizer particles contain from about 4  
to about 12% by weight of filled polyurethane(urea).
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22. The process of Claim 19, wherein said ratio is from about 80:30 to  
about 30:70.
23. The process of Claim 22, wherein said ratio is from about 60:40 to  
25 about 40:60.
24. The process of Claim 19, wherein said filler is an inert, inorganic  
material which is insoluble or substantially insoluble in water and which  
contains at least 50% by weight of particles having a particle size of less  
30 than 100 microns.

25. A process for producing polyurethane(urea) encapsulated, slow release fertilizer particles comprising:
- a) applying an isocyanate reactive component to fertilizer particles to form coated fertilizer particles,
  - 5 b) adding a polyisocyanate to said coated fertilizer,
  - c) mixing an inert inorganic filler with the mixture of step b) before the isocyanate and isocyanate-reactive component react and
  - d) allowing the reactive components to react to form filler containing polyurethane(urea) encapsulated fertilizer particles containing from  
10 about 1 to about 15 percent by weight of filled polyurethane(urea), said percent by weight based on the total weight of the encapsulated fertilizer, with the proviso that the weight ratio of polyurethane(urea) to filler is from about 80:20 to about 30:70.
- 15 26. The process of Claim 25 wherein steps a), b), c) and d) are repeated (successively) as many times as necessary, with the polyurethane(urea) encapsulated fertilizer particles from the previous step d) being substituted for the fertilizer particles in step a), so as to form  
20 polyurethane(urea) encapsulated fertilizer particles containing from about 1 to about 15 % by weight of filled polyurethane(urea) based on the total weight of the encapsulated fertilizer.
27. The process of Claim 25, wherein said filler containing polyurethane(urea) encapsulated fertilizer particles contain from about 4  
25 to about 12% by weight of filled polyurethane(urea).
28. The process of Claim 25, wherein said ratio is from about 80:30 to about 30:70.
29. The process of Claim 28, wherein said ratio is from about 60:40 to  
30 about 40:60.

30. The process of Claim 25, wherein said filler is an inert, inorganic material which is insoluble or substantially insoluble in water and which contains at least 50% by weight of particles having a particle size of less than 100 microns.

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31. A process for producing polyurethane(urea) encapsulated, slow release fertilizer particles comprising:

- a) mixing fertilizer particles with an inert inorganic filler,
- b) applying an isocyanate reactive component to the mixture to form a  
10 mixture of coated fertilizer particles and coated inert filler,
- c) adding a polyisocyanate component to the resultant mixture and
- d) allowing the reactive components to react to form filler containing  
polyurethane(urea) encapsulated fertilizer particles containing from  
about 1 to about 15 percent by weight of filled polyurethane(urea),  
15 said percent by weight based on the total weight of the  
encapsulated fertilizer, with the proviso that the weight ratio of  
polyurethane(urea) to filler is from about 80:20 to about 30:70.

32. The process of Claim 31 wherein steps a), b), c) and d) are  
20 repeated (successively) as many times as necessary, with the  
polyurethane(urea) encapsulated fertilizer particles from the previous step  
d) being substituted for the fertilizer particles in step a), so as to form  
polyurethane(urea) encapsulated fertilizer particles containing from about  
1 to about 15 % by weight of filled polyurethane(urea) based on the total  
25 weight of the encapsulated fertilizer.

33. The process of Claim 31, wherein said filler containing  
polyurethane(urea) encapsulated fertilizer particles contain from about 4  
to about 12% by weight of filled polyurethane(urea).

34. The process of Claim 31, wherein said ratio is from about 80:30 to about 30:70.

35. The process of Claim 34, wherein said ratio is from about 60:40 to about 40:60.

36. The process of Claim 31, wherein said filler is an inert, inorganic material which is insoluble or substantially insoluble in water and which contains at least 50% by weight of particles having a particle size of less than 100 microns.